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10/19/03
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF :
TAMIO KAWASUMI : EXAMINER THOMAS, ALEXANDER S
SERIAL NO: 10/024,566 :
FILED DECEMBER 21, 2001 : GROUP ART UNIT: 1772

FOR LAMINATE HAVING SURFACE PROTECTION LAYER

DECLARATION UNDER 37 C.F.R. § 1.132

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Now comes Tamio Kawasumi, who deposes and states that:

1. That I am an inventor of the present application.

In 1990, I graduated the faculty of engineering department of Yamanashi University. Since 1992, I have been engaged by Mitsui Chemicals Inc. Since 1999, I have done research and development of materials.

2. The following experiments were carried out by me or under my direct supervision and control.

Experiment 1:

Production of Samples

(Example 1-1)

A glass fiber reinforced PP sheet (PREGLON, Mitsui Chemicals Inc., basis weight 150 g/m², PET nonwoven fabric of 70 g/m² was laminated on one surface of the sheet) was prepared as a fiber reinforced resin layer. Two-component curing system polyurethane materials (SX-350, Mitsui Takeda Chemicals, Inc.) mixed and agitated beforehand were poured onto the surface, which the nonwoven fabric was not laminated, of the sheet. A polyamide film (DAIAMIRONM C-Z, Mitsubishi Plastics, Inc., nylon 6 cast film, thickness is 100 μ m, corona discharging treatment was applied to the laminate side surface) was immediately laminated on the polyurethane. The sheet which the polyamide film piled up was pressed, and it adjusted so that the thickness of the laminate after curing of polyurethane materials might be set to 1 mm. Mixture of the polyurethane materials was carried out at room temperature. The cure of the urethane materials was carried out by gear oven for 15 minutes.

(Comparative example 1-1)

A laminate was fabricated by a method identical with the above example 1-1 except that a release coated paper was laminated on the polyurethane materials instead of the polyamide film, and released the release coated paper was released after the polyurethane materials were cured.

(Comparative example 1-2)

A laminate was fabricated by a method identical with the above example 1-1 except that a plasticized polyvinyl chloride film was employed instead of the polyamide film.

Stain Resistance Test (Heel mark Test)

This test was carried out based on JIS K 3920-16. The resistance over a sole or a caster's rubber component adhering to a flooring material is estimated by this test.

Results

Example 1, the black heel mark was completely removed by rubbing the surface of example 1 with a cloth. As for comparative examples 1-1 and 1-2, by rubbing with the cloth, it was not possible to completely remove the black heel marks and the marks remained on the surface. Therefore, example 1-1 is excellent in stain resistance compared with comparative samples 1-1 and 1-2.

Experiment 2:

Production of Samples

(Example 2-1)

A laminate was fabricated by the same method as example 1-1.

(Comparative example 2-1)

A laminate was fabricated by the same method as comparative example 1-1.

(Comparative example 2-2)

A laminate was fabricated by the same method as comparative example 1-2.

Chemical Resistance Test

This test was carried out based on JIS A1415. With this test, the influence which the chemicals give to the samples, is observed visually. Phosphoric acid 10% aqueous solution, hypochlorous acid soda 10% aqueous solution and toluene were used as the chemicals in this test.

Results

As for example 2-1, change was not observed with any aqueous solution. As for comparative example 2-1, change was observed with all aqueous solutions. Therefore, example 2-1 is excellent in chemical resistance compared with

comparative example 2-1. As for comparative example 2-2, since there was not enough time, the result was not produced.

Experiment 3:

Production of Samples

(Example 3-1)

A laminate was fabricated by the same method as example 1-1.

(Comparative example 3-1)

A laminate was fabricated by the same method as comparative example 1-1.

(Comparative example 3-2)

A laminate was fabricated by the same method as comparative example 1-2.

Abrasion Test

This test was carried out based on JIS K7204 Taber Abrasion Test (H-18, 4.9N, abrasion loss at 1000 rotations). This test is a typical method of evaluating the abrasion durability of a flooring material.

Results

The abrasion loss of example 3-1 was 34mg. In contrast, the abrasion loss of comparative example 3-1 was 46 mg, and the abrasion loss of comparative example 3-2 was 118 mg. Therefore, abrasion resistance is excellent in example 3-1 compared with comparative samples 3-1 and 3-2.

Experiment 4:

Production of Samples

(Example 4-1)

A laminate was fabricated by the same method as example 1-1.

(Comparative example 4-1)

A laminate was fabricated by the same method as comparative example 1-1.

(Comparative example 4-2)

A laminate was fabricated by the same method as comparative example 1-2.

Caster Resistance Test

This test was carried out based on JIS A1514 caster test A method. With this test, the durability of a flooring material over passing loads, such as a forklift, a lifter, and a cart, was evaluated. The durability was evaluated at the number of repetition rotations of the caster (caster load is 2000 N) until the sample results in peeling or breaking.

Results

As for example 4-1, the polyamide film wore at 1500 rotations. As for comparative example 4-2, the plasticized polyvinyl chloride film was peeled from the polyurethane layer at 50 rotations. As for comparative example 4-1, the polyurethane layer was peeled at 2500 rotations. However, comparative example 4-1 cannot be simply compared with example 4-1 and comparative example 4-2, because the laminate of comparative example 4-1 was considered after the surface protection layer (film) was peeled or broken.

3. The undersigned petitioner declares further that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States

Code and that such application or any patent issuing thereon.

4. Further Deponent saith not.

Tamio Kawasumi
Tamio Kawasumi

Sept. 19, 2003
Date